AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A method of constructing a halftone screen formed of supercells comprising:

defining a halftone screen frequency and screen angle according to a predetermined requirement;

defining a desired subcell having the predetermined frequency and screen angle requirement, wherein the subcell is substantially specified by two spatial vectors $\mathbf{v}_1 = (x_1, y_1)$ and $\mathbf{v}_2 = (x_2, y_2)$, wherein x_1, x_2, y_1, and y_2 are real numbers;

forming a supercell comprising an array of the subcells, wherein the supercell is substantially specified by two spatial vectors $\mathbf{u}_1$ and $\mathbf{u}_2$ and wherein the relationship between the supercell and the subcell satisfies a supercell relationship:

$k_1\mathbf{v}_1 + k_2\mathbf{v}_2 = \mathbf{u}_1$, and

$k_3\mathbf{v}_1 + k_4\mathbf{v}_2 = \mathbf{u}_2$, where k_1, k_2, k_3 and k_4 are integer values such that the supercell and subcell have the property that when the supercell is tiled, the subcell can also be tiled;

solving the supercell relationship for particular values of k_1, k_2, k_3 and k_4 given the defined halftone frequency and screen angle.

2. (Original) The method of claim 1, further comprising:

using particular integer values for k_1, k_2, k_3 and k_4 and $\mathbf{u}'_1(m_1, n_1)$ and $\mathbf{u}'_2(m_2, n_2)$, where m_1, n_1, m_2 and n_2 are integers to solve the supercell-subcell relationship for v_1' and v_2', where $\mathbf{v}'_1$ and $\mathbf{v}'_2$ are approximate solutions of the desired subcell v_1 and v_2; and

comparing v_1 and v_2 with v_1' and v_2'.

3. (Original) The method of claim 1, wherein the step of solving the supercell-subcell relationship comprises directly searching for solutions.

4. (Original) The method of claim 1, wherein a plurality of supercell solutions are determined and further comprising:

applying a constraint to the determined solutions; and

removing supercell solutions that do not satisfy the constraints.

5. (Original) The method of claim 4, further comprising selecting a supercell solution that satisfies the constraint and creating a halftone screen using the selected supercell.

6. (Currently Amended) A method of constructing a halftone screen formed of supercells, comprising:

selecting a frequency and screen angle of interest;

identifying a subcell by spatial vectors which satisfies the selected frequency and screen angle of interest;

forming a supercell comprising an array of the subcells, wherein an integer relationship exists between the supercell and the subcells, such that the supercell and subcell have the property that when the supercell is tiled, the subcell can also be tiled;

solving the integer relationship for particular integer values given the selected frequency and screen angle of interest;

testing one of any resulting solutions according to any additional constraints or tolerances; and

if any of the resulting solutions satisfies the testing, creating a halftone screen using the tested solution.

7. (New) The method of claim 1, further comprising:

specifying the desired frequencies and screen angles by two frequency vectors, $\mathbf{F}_1 = (f_{X1}, f_{Y1})$ and $\mathbf{F}_2 = (f_{X2}, f_{Y2})$;

converting the supercell relationship to: $m_1 = k_1x_1 + k2x_2$, $n_1 = k_1y_1 + k_2y_2$, $m_2 = k_3x_1 + k_4x_2$, $n_2 = k_3y_1 + k_4y_2$ and solving the corresponding spatial specification for particular vectors $\mathbf{v}_1$ and $\mathbf{v}_2$;

selecting a set of integer values, k_1, k_2, k_3 and k_4 , such that integer values, k_1, k_2, k_3 and $k_4 = 0, +1, -1, +2, -2, \ldots, K$;

for each integer value in the set:

finding real numbers, $\mathbf{u}_1$ and $\mathbf{u}_2$ according to $k_1\mathbf{v}_1 + k_2\mathbf{v}_2 = \mathbf{u}_1$, and $k_3\mathbf{v}_1 + k_4\mathbf{v}_2 = \mathbf{u}_2$;

rounding off the real-number vectors, $\mathbf{u}_1$ and $\mathbf{u}_2$, to the closest integer vectors, $\mathbf{u}'_1(m_1, n_1)$ and $\mathbf{u}'_2(m_2, n_2)$, where m_1, n_1, m_2 and n_2 are integers;

finding an approximate solution $\mathbf{v}'_1$ and $\mathbf{v}'_2$ by solving $k_1\mathbf{v}'_1 + k_2\mathbf{v}'_2 = \mathbf{u}'_1$, and $k_3\mathbf{v}'_1 + k_4\mathbf{v}'_2 = \mathbf{u}'_2$;

comparing $\mathbf{v}'_1$ and $\mathbf{v}'_2$ with $\mathbf{v}_1$ and $\mathbf{v}_2$;

if the difference is within a predetermined tolerance, saving the supercell solution, $\mathbf{u}'_1$ and $\mathbf{u}'_2$, otherwise, continuing with another set of integers, k_1, k_2, k_3 and k_4.